

Claims

What is claimed is:

5 *Subatz* 1. A method of receiving, decoding and distributing video signals from a telecommunications network to a plurality of televisions locatable in at least two separate locations via a residential gateway, the method comprising:

receiving channel select commands from remote control
10 devices associated with the plurality of televisions, wherein at least a first channel select command is received directly by a receiver within the residential gateway;

receiving a video signal from the telecommunications network;

15 transporting the video signal over a video bus to a video processor;

processing the video signal to produce television signals corresponding to the channel select commands; and

20 transmitting the television signals to the respective televisions.

2. The method of claim 1, wherein said receiving channel select commands includes receiving the first channel select command from an optical remote control device associated with a
25 television located in close proximity to the residential gateway at an optical receiver within the residential gateway.

3. The method of claim 1, wherein said receiving channel select commands includes receiving channel select commands for televisions remotely located from the residential gateway over media connecting the remotely located televisions to the residential gateway.

4. The method of claim 3, wherein said receiving channel select commands for televisions remotely located includes:

transmitting optical signals, including the channel select commands, from optical remote control devices associated with the remotely located televisions to optical receivers located in close proximity to and coupled to the remotely located televisions;

detecting the optical signals and generating corresponding demodulated pulse trains at the optical receivers;

transmitting the pulse trains to RF transmitters;

receiving the pulse train and generating corresponding RF signals at the RF transmitters; and

transmitting the RF signals from the RF transmitters to the residential gateway over media.

5. The method of claim 4, wherein said transmitting the RF signals from the RF transmitters includes:

transmitting the RF signals from the RF transmitters to a remote antennae module over the media, the media connecting the remotely located televisions to the remote antennae module;

receiving the RF signals at the remote antennae module;

5 extracting the channel select commands from the RF signals received at the remote antennae module; and

transmitting the channel select commands from the remote antennae module to the residential gateway.

10 6. The method of claim 5, wherein the media is a coaxial cable.

7. The method of claim 4, wherein said transmitting the RF signals from the RF transmitters includes:

15 transmitting the RF signals from the RF transmitters to a media interface device over the media, the media connecting the remotely located televisions to the media interface device;

receiving the RF signals at the media interface device;

20 extracting the channel select commands from the RF signals received at the media interface device; and

transmitting the channel select commands from the media interface device to the residential gateway.

8. The method of claim 4, wherein the optical remote control devices are infrared remote control devices and the optical signals are infrared signals.

5 9. A residential gateway for distributing video signals to a plurality of televisions locatable within at least two separate locations, said residential gateway comprising:

a receiver for directly receiving a first channel select command from a first remote control device associated with a
10 first television;

a remote control processor for processing channel select commands;

a network interface module for receiving signals, including video signals, from a telecommunications network, wherein the
15 received video signals correspond to the channel select commands;

a video processor for processing the received video signals to produce television signals; and

a video bus for transporting the received video signals to said video processor.

20 10. The residential gateway of claim 9, wherein said receiver is an optical receiver, the first channel select command is an optical signal, the first remote control device is an optical remote control device, and the first television is
25 located in close proximity to the residential gateway.

11. The residential gateway of claim 9, further comprising optical conversion devices in close proximity to and coupled to televisions that are remotely located from the residential gateway, said optical conversion devices

receiving optical signals, including channel select commands, from optical remote control devices associated with the remotely located televisions;

converting the optical signals to RF signals; and transmitting the RF signals to the residential gateway over media.

12. The residential gateway of claim 11, wherein said optical conversion devices include:

an optical receiver for detecting the optical signal and generating a corresponding pulse train;

a bias switch connected to said optical receiver, said bias switch turning on and off in response to the pulse train;

an oscillator connected to said bias switch for producing a modulated RF signal, the modulated RF signal being produced by said oscillator turning on and off in response to said bias switch; and

a diplexer filter for injecting the RF signal onto the media in the direction of the residential gateway.

13. The residential gateway of claim 12, wherein said optical conversion device further includes an attenuator connected between said oscillator and said diplexer for reducing the amplitude of the RF signal.

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14. The residential gateway of claim 11, further comprising a remote antennae module coupled to said optical conversion device with the media, said remote antennae module receiving the RF signals and extracting the channel select commands from the RF signals.

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15. The residential gateway of claim 14, wherein the media is a coaxial cable.

16. The residential gateway of claim 14, wherein said remote antennae module extracts the channel select commands from the RF signal as a 1 KHz signal.

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17. The residential gateway of claim 11, further comprising a media interface device coupled to said optical conversion device with the media, said media interface device receiving the RF signals and extracting the channel select commands from the RF signals.

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18. The residential gateway of claim 17, wherein said media interface device includes a diplexer for extracting other signals from the media, the other signals having been transported over the same media as the channel select commands.

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19. The residential gateway of claim 18, wherein said media interface device further includes a balun so that the impedance of a subset of the other signals can be adjusted so that the subset of the other signals can be processed by the residential gateway.

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20. The residential gateway of claim 17, wherein said media interface device is directly connected to the residential gateway.

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21. A method for receiving and decoding signals from a telecommunications network at a residential gateway, and transmitting decoded signals from the residential gateway to a plurality of devices including multiple televisions, the method comprising:

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connecting each of the plurality of devices and the telecommunications network to the residential gateway so that all communications between the devices and the telecommunications network must pass through the residential gateway;

selecting television channels to view for the multiple
televisions by programming associated remote control devices to
transmit channel select commands, wherein a first channel select
command is received by a receiver within the residential gateway;

5 transporting the channel select commands to a network
interface module over a first bus;

transmitting the channel select commands from the network
interface module to the telecommunications network;

10 receiving video signals from the telecommunications network
at the network interface module;

transporting the video signals to a video processor over a
second bus;

processing the video signals into television signals
corresponding to the channel select commands; and

15 transmitting the television signals to the corresponding
televisions.

22. The method of claim 21, wherein said connecting each of
the plurality of devices and the telecommunications network to
20 the residential gateway includes connecting a television located
in close proximity to the residential gateway to the residential
gateway with S-video cables.

23. The method of claim 21, wherein said connecting each of
25 the plurality of devices and the telecommunications network to

the residential gateway includes connecting televisions remotely located from the residential gateway to the residential gateway via optical conversion devices located in close proximity to and connected to the remotely located televisions, media, and a
5 remote antennae module connected to each of the optical conversion devices with the media and connected to the residential gateway.

24. The method of claim 21, wherein said selecting a
10 television channel includes selecting a television channel for a television located in close proximity to the residential gateway by programming an associated optical remote control device which transmits an optical signal, including a channel select command, to the receiver within the residential gateway.

25. The method of claim 21, wherein said selecting a
television channel includes selecting a television channel for televisions remotely located from the residential gateway by programming associated optical remote control devices which
20 transmit optical signals, including channel select commands.

26. The method of claim 25, wherein said programming associated optical remote control devices includes:

transmitting optical signals, including the channel select
25 commands, from optical remote control devices associated with the

remotely located televisions to optical receivers located in close proximity to and coupled to the remotely located televisions;

detecting the optical signals and generating corresponding demodulated pulse trains at the optical receivers;

transmitting the pulse trains to RF transmitters;

receiving the pulse trains and generating corresponding RF signals at the RF transmitters; and

transmitting the RF signals from the RF transmitters to the residential gateway over media.

27. The method of claim 26, wherein said transmitting the RF signals from the RF transmitters includes:

transmitting the RF signals from the RF transmitters to a remote antennae module over the media, the media connecting the remotely located televisions to the remote antennae module;

receiving the RF signals at the remote antennae module;

extracting the channel select commands from the RF signals received at the remote antennae module; and

transmitting the channel select commands from the remote antennae module to the residential gateway.

28. The method of claim 27, wherein the remote antennae module is located within a media interface device.

29. The method of claim 21, wherein said transmitting the television signals includes transmitting the television signals to the first television as S-video signals.

5 30. A method for receiving signals from a telecommunications network, decoding the signals, and transmitting the decoded signals from a residential gateway to a plurality of devices including multiple televisions, the method comprising:

10 connecting the residential gateway to the telecommunications network and to at least one television that is remotely located from the residential gateway;

15 selecting a television channel to view for the at least one television by programming associated optical remote control devices, wherein the optical remote control devices transmit channel select commands as optical signals to optical conversion devices connected to the at least one television, the optical conversion devices receive the optical signals, convert the optical signals to RF signals and transmit the RF signals over
20 media to a remote antennae module which demodulates the RF signals and extracts the portion corresponding to the channel select commands;

transmitting the channel select commands to the telecommunications network;

receiving a video signal from the telecommunications network;

processing the video signal to produce television signals corresponding to the channel select commands, wherein the
5 processing is performed by a video processor; and

transmitting the television signals to the at least one television.

31. A residential gateway for receiving and decoding
10 signals from a telecommunications network and transmitting the decoded signals to a plurality of devices including multiple televisions, the residential gateway comprising:

a network interface module for transmitting upstream signals, including channel select commands, to the
15 telecommunications network and receiving downstream signals, including video signals, from the telecommunications network;

a video processor for processing the video signals into at least one television signal corresponding to at least one channel select command, and transmitting the at least one television
20 signal to the corresponding television;

a remote control module for processing the channel select commands, wherein at least one of the channel select commands is extracted from a RF signal received from an optical conversion device connected to a remotely located television.

32. The residential gateway of claim 31, wherein the RF signal is generated by the optical conversion device in response to an optical signal received from an optical remote control device, the optical conversion device transmitting the RF signal over cable to a remote antennae module which demodulates the RF signal and extracts the portion corresponding to the channel select command.

33. A residential gateway for receiving and decoding signals from a telecommunications network and transmitting the decoded signals to a plurality of devices including multiple televisions, the residential gateway comprising:

a network interface module for transmitting upstream signals, including channel select commands, to the telecommunications network and receiving downstream signals, including video signals, from the telecommunications network;

a video processor for processing the video signals to generate television signals corresponding to channel select commands, and transmitting the television signals to the corresponding televisions;

an optical conversion device located in close proximity to and connected to a remotely located television, said optical conversion device receiving an optical signal, including a channel select command, from an optical remote control device associated with the remotely located television, converting the

optical signal to an RF signal, and modulating the RF signal over media; and

1 a remote antennae module, connected to the media and the residential gateway, for demodulating the RF signal, extracting
5 the portion corresponding to the channel select command, and transmitting the channel select command to the residential gateway.

34. The residential gateway of claim 33, wherein said
10 optical conversion device includes:

an optical receiver for detecting the optical signal and generating a corresponding pulse train;

a bias switch connected to said optical receiver, said bias switch turning on and off in response to the pulse train;

15 an oscillator connected to said bias switch for producing a modulated RF signal in response to said bias switch turning on and off said oscillator; and

a diplexer filter for injecting the RF signal onto the media in the direction of the residential gateway.

20 35. The residential gateway of claim 34, wherein said optical conversion device further includes an attenuator connected between said oscillator and said diplexer for reducing the amplitude of the RF signal.

36. The residential gateway of claim 33, wherein said remote antennae module is an integral part of a media interface device.

5 37. The residential gateway of claim 33, wherein the media interface device further includes a diplexer for extracting other signals from the media, the other signals having been transported over the same media as the channel select commands.

10 38. The residential gateway of claim 37, wherein the media interface device further includes a balun so that the impedance of a subset of the other signals can be adjusted so that the subset of the other signals can be processed by the residential gateway.

15 39. An optical conversion device for receiving optical signals, converting the optical signals to RF signals, and transmitting the RF signals over media, the optical conversion device comprising:

20 an optical receiver for detecting the optical signal and generating a corresponding pulse train;

a bias switch connected to said optical receiver, said bias switch turning on and off in response to the pulse train;

25 an oscillator connected to said bias switch for producing a modulated RF signal, the modulated RF signal being produced by

said oscillator turning on and off in response to said bias switch; and

a diplexer filter for directionally injecting the RF signal onto the media.

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40. The optical conversion device of claim 39, further comprising an attenuator connected between said oscillator and said diplexer for reducing the amplitude of the RF signal.

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41. The optical conversion device of claim 39, wherein the optical conversion device is connected to a TV and receives optical signals corresponding to channel select commands associated with the TV from a corresponding remote control device.

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42. The optical conversion device of claim 41, wherein said
 diplexer filter injects the RF signal onto the media in the
 direction of a residential gateway that controls communications
 between the TV and a telecommunications network.

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43. The optical conversion device of claim 39, wherein the media is a coaxial cable.

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44. / An optical conversion device for receiving optical signals/representing channel select commands from an optical

remote control device associated with a TV, converting the optical signal to an RF signal, and transmitting the RF signal over media to a residential gateway, the optical conversion device comprising:

5 an optical receiver for detecting the optical signal and generating a corresponding pulse train;

 a bias switch connected to said optical receiver, said bias switch turning on and off in response to the pulse train;

 an oscillator connected to said bias switch for producing a
10 modulated RF signal, the modulated RF signal being produced by said oscillator turning on and off in response to said bias switch; and

 a diplexer filter for injecting the RF signal onto the media in the direction of the residential gateway.

15 45. The optical conversion device of claim 44, further comprising an attenuator connected between said oscillator and said diplexer for reducing the amplitude of the RF signal.